

Application no. PCT/EP/00317

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New Claims 1 to 31

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01-02
1. A postal dispatch system (20, 20') comprising:  
a sortation conveyor (36, 36') having a main line defined by a conveying surface and conveying randomly arranged containers (94) of sorted mail, a plurality of spurs (44, 44') extending from said mail line in the direction of particular dispatch carts (52), and a diverter mechanism (42, 42') at each of said spurs (44, 44') which selectively diverts containers (94) from said conveying surface onto the associated one of said spurs (44, 44');  
characterized in at least one transport mechanism (50, 50') which transports containers (94) from each of said spurs (44, 44') to one of this carts (52)  
15 ~~juxtaposed with that spur (44, 44')~~
2. The system according to claim 1,  
wherein said at least one transport mechanism (50, 50') is automatically operated and said carts (52) are hand-operated.
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3. The system according to claim 1 or 2  
wherein said conveying surface is a continuous loop.
4. The system according to any of the claims 1 to 3,  
25 including another diverter mechanism (40) which diverts containers (94) from a feed line (26) onto said conveying surface.
5. The system according to any of the claims 1 to 4,  
wherein said at least one transport mechanism (50, 50') lowers containers (94)  
30 from each of said spurs (44, 44') to a subjacent cart (52) associated with that spur (44, 44').
6. The system according to any of the claims 1 to 5,  
wherein said at least one transport mechanism (50, 50') includes a plurality of
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stationary transport mechanisms (50, 50'), one associated with each of said spurs (44, 44').

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7. The system according to any of the claims 1 to 6,  
wherein said at least one transport mechanism (50, 50') travels between plural  
ones of said spurs (44, 44').
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8. The system according to any of the claims 1 to 7,  
wherein said at least one transport mechanism (50, 50') raises a subjacent cart  
(52) associated with that spur (44, 44') to the level of that spur (44, 44') and  
moves containers (94) directly from the spur (44, 44') to the cart (52).
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9. The system according to any of the claims 1 to 8,  
wherein said transport mechanism (50, 50') includes an extendable support  
member (54) and a vertical lift (56), said extendable support member (54) is  
adapted to retrieving containers (94) from said at least one of said spurs (44, 44')  
and inserting containers (94) to the associated cart (52) and said vertical lift (56)  
adapted to moving said support member (54) between the vertical level of said  
one of said spurs (44, 44') and the vertical level of the associated cart (52).
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10. The system according to claim 9,  
wherein said extendable support member (54) includes a plurality of fingers (80)  
which comb between portions of said at least one of said spurs (44, 44') below  
containers (94) supported on that spur (44, 44').
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11. The system according to claim 10,  
wherein said spur (44, 44') includes a conveying surface made up of a plurality of  
roller members (90) and wherein said fingers (80) comb between said roller  
members (90).
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12. The system according to claim 10 or 11,  
wherein said vertical lift (56) elevates said fingers (80) upwardly in order to  
retrieve a container (94) from said one of said spurs (44, 44') and elevates said

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fingers (80) downwardly in order to insert a container (94) to the associated cart (52).

13. The system according to claims 8 to 12,

wherein said extendable support member (54) is extended according to a controlled acceleration profile.

14. The system according to claim 13,

wherein said extendable support member (54) is extended by a variable frequency motor.

15. The system according to claim 9 to 14,

wherein said vertical lift (56) is servo controlled.

16. The system according to claim 1 to 15,

including a plurality of said transport mechanisms (50, 50'), wherein each of said transport mechanisms (50, 50') is inhibited from operation when a cart (52) serviced by that transport mechanism (50, 50') is being replaced.

17. The system according to claim 1 to 16,

wherein other transport mechanisms (50, 50') are not inhibited from operation when one of said transport mechanisms (50, 50') is inhibited from operation.

18. The system according to claim 1 to 17,

wherein said conveying surface is defined by a plurality of powered rollers, or by a line shaft conveyor.

19. The system according to any of the claims 1 to 18,

wherein each of said diverters (42) is a pop-up diverter.

20. The system according to claim 1 to 19,

wherein said spurs (44, 44') are arranged on both sides of said conveying surface and wherein each of said diverters (42) is bidirectional.

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21. The system according to any of the claims 1 to 20, including an alignment device (102) positioned adjacent each of said carts (52) which aligns containers (94) being inserted to the associated cart (52).

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22. The system according to claim 21, wherein said alignment device (102) is funnel shaped.

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23. The system according to any of the claims 9 to 22, wherein said fingers (80) are extendable horizontally in order to engage a container (94).

24. The system according to any of the claims 9 to 22, wherein said extendable support member (54) further includes a stripper member (76) extendable horizontally independently of said fingers (80) in order to slide containers (94) off of said fingers (80).

25. The system according to any of claims 1 to 24, including a plurality of cart areas each having an enclosure (96) with a movable gate (98) that can be selectively opened to allow other carts (52) in other cart areas to be loaded while one cart (52) is being removed.

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26. A method of dispatching randomly ordered containers (94) of sorted mail to dispatch carts (52), comprising:  
sorting containers (94) to particular locations, each associated with a hand-operated cart (52); and automatically transporting containers (94) between each of said particular locations and the associated cart (52).

27. The method according to claim 26, wherein said transporting includes accumulating a layer of containers (94) at a particular location and transporting said layer between that location and the associated cart (52).

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28. The method according to claim 27, wherein said accumulating a layer includes accumulating a row of containers (94) at said particular location, shifting the row of containers and accumulating another row of containers (94) at said particular location.

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29. The method according to claim 27 or 28, wherein said sorting containers includes providing a sortation conveyor (36, 36') having a main line defined by a conveying surface and a plurality of spurs (44, 44') positioned along said main line and further includes diverting containers (94) from said conveying surface to spurs (44, 44') at said particular locations.
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30. The method according to any of the claims 26 to 29, wherein said transporting containers (94) includes positioning an associated cart (52) below the associated location and causing relative movement between containers (94) at the particular location and the associated cart (52).
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31. The method according to any of the claims 26 to 30, wherein a plurality of cart areas are provided each having an enclosure (96) with a movable gate (98) and selectively opening one of said gates (98) to allow other carts (52) in other carts areas to be loaded while one cart (52) is being removed.
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